JULY 2003 VOLUME 121 NUMBER 1

EDITORIAL

iv **Clinical Snippets**
Lowell A. Goldsmith

v **In This Issue**
Brian J. Nickoloff

vii **The ABCs of Sunscreen Protection Factors**
Margaret L. Kripke

ix **'The Discovery Channel': CRAC'king the Code of Calcium Influx**
Theodora Mauro

xi **Proteomics for Cell Protein Expression Profiling**
Katheryn A. Resing

xiii **Photocopying Cancer Cells**
Douglas E. Brash

REVIEW

1 **Electrical Stimulation of Wound Healing**
Joseph C. Ojingwa and R. Rivkah Isseroff

ORIGINAL ARTICLES

APPENDAGES

13 **Expression Patterns of the Transcription Factor AP-2α During Hair Follicle Morphogenesis and Cycling**
Andrey A. Panteleyev, Pamela J. Mitchell, Ralf Paus, and Angela M. Christiano

20 **Inflammatory Events Are Involved in Acne Lesion Initiation**
Anthony H. T. Jeremy, Diana B. Holland, Susan G. Roberts, Kathryn F. Thomson, and William J. Cunliffe

28 **Human Glands of Moll: Histochemical and Ultrastructural Characterization of the Glands of Moll in the Human Eyelid**
Mechthild Stoeckelhuber, Beate M. Stoeckelhuber, and Ulrich Welsch

CLINICAL RESEARCH

37 **Impact of Atopic Skin Diathesis on Occupational Skin Disease Incidence in a Working Population**
Heinrich Dickel, Thomas M. Bruckner, Anne Schmidt, and Thomas L. Diepgen

CONNECTIVE TISSUE

41 **Sustained Activation of Fibroblast Transforming Growth Factor-β/Smad Signaling in a Murine Model of Scleroderma**
Shinsuke Takagawa, Gabriella Lakos, Yasuji Mori, Toshiyuki Yamamoto, Kiyoshi Nishioka, and John Varga

EPIDERMIS

51 **Comparative Proteomic Profiling of Murine Skin**
Chun-Ming Huang, K. Wade Foster, Tivanka DeSilva, JianFeng Zhang, Zhongkai Shi, Nabiha Yusuf, Kent R. Van Kampen, Craig A. Elmets, and De-chu C. Tang

GENETICS

65 **The Human Cystatin M/E Gene (CST6): Exclusion Candidate Gene for Harlequin Ichthyosis**
Patrick L. J. M. Zeeuwen, Beverly A. Dale, Gys J. de Jongh, Ivonne M. J. J. van Vlijmen-Willems, Philip Fleckman, Janet R. Kimball, Karen Stephens, and Joost Schalkwijk

IMMUNOLOGY/INFECTION

69 **Protein Kinase C α Associates with Phospholipase D1 and Enhances Basal Phospholipase D Activity in a Protein Phosphorylation- Independent Manner in Human Melanoma Cells**
Masahiro Oka, Toshiro Kageshita, Tomomichi Ono, Akinobu Goto, Toshio Kuroki, and Masamitsu Ichihashi

77 **Pimecrolimus Inhibits the Elicitation Phase but Does Not Suppress the Sensitization Phase in Murine Contact Hypersensitivity, in Contrast to Tacrolimus and Cyclosporine A**[1]
Josef G. Meingassner, Hermann Fahrngruber, and Assadollah Bavandi

81 **Rolipram Inhibits Polarization and Migration of Human T Lymphocytes**
Esther Layseca-Espinosa, Lourdes Baranda, Brenda Alvarado-Sánchez, Diana Portales-Pérez, Haydée Portillo-Salazar, and Roberto González-Amaro

KERATINOCYTES/EPIDERMIS

88 **Role of Intracellular Calcium Mobilization and Cell-Density Dependent Signaling in Oxidative-Stress-Induced Cytotoxicity in HaCaT Keratinocytes**
Edina Bakondi, Mónika Gönczi, Éva Szabó Péter Bai, Pál Pacher, Pál Gergely, László Kovács, János Hunyadi, Csaba Szabó, László Csernoch, and László Virág

0022-202X/03/$15.00 • Copyright © 2003 by The Society for Investigative Dermatology, Inc.

96 **Alterations in Desmosome Size and Number Coincide with the Loss of Keratinocyte Cohesion in Skin with Homozygous and Heterozygous Defects in the Desmosomal Protein Plakophilin 1**
James R. McMillan, Marek Haftek, Masashi Akiyama, Andrew P. South, Henri Perrot, John A. McGrath, Robin A. J. Eady, and Hiroshi Shimizu

104 **Ultrastructural Evidence of Stratum Corneum Permeabilization Induced by Photomechanical Waves**
Gopinathan K. Menon, Nikiforos Kollias, and Apostolos G. Doukas

110 **Constitutive Overexpression of Human Telomerase Reverse Transcriptase but Not c-myc Blocks Terminal Differentiation in Human HaCaT Skin Keratinocytes**
Ana Cerezo, Hans-Jürgen Stark, Sharareh Moshir, and Petra Boukamp

120 **Sequential Activation of Store-Operated Currents in Human Gingival Keratinocytes**
Sahba Fatherazi, Carol M. Belton, and Kenneth T. Izutsu

132 **S100A7 (Psoriasin) Interacts with Epidermal Fatty Acid Binding Protein and Localizes in Focal Adhesion-Like Structures in Cultured Keratinocytes**
Monica Ruse, Ann-Marie Broome, and Richard L. Eckert

142 **β2-Adrenergic Receptor Antagonist Accelerates Skin Barrier Recovery and Reduces Epidermal Hyperplasia Induced by Barrier Disruption**
Mitsuhiro Denda, Shigeyoshi Fuziwara, and Kaori Inoue

149 **TRAIL-Induced Apoptosis and Gene Induction in HaCaT Keratinocytes: Differential Contribution of TRAIL Receptors 1 and 2**
Martin Leverkus, Martin R. Sprick, Tina Wachter, Andrea Denk, Eva-Bettina Bröcker, Henning Walczak, and Manfred Neumann

156 **Differentiation-Dependent Regulation of Secreted Phospholipases A2 in Murine Epidermis**
Silvia Gurrieri, Gerhard Fürstenberger, Alexia Schadow, Ulrike Haas, Alan G. Singer, Farideh Ghomashchi, Josef Pfeilschifter, Gérard Lambeau, Michael H. Gelb, and Marietta Kaszkin

MELANOCYTES/MELANOMA

165 **Stress Augmented Ultraviolet-Irradiation-Induced Pigmentation**
Kaori Inoue, Junichi Hosoi, Ritsuro Ideta, Naomi Ohta, Ohji Ifuku, and Toru Tsuchiya

172 **Overexpression of cMOAT (MRP2/ABCC2) Is Associated with Decreased Formation of Platinum-DNA Adducts and Decreased G2-Arrest in Melanoma Cells Resistant to Cisplatin**
Bernd Liedert, Verena Materna, Dirk Schadendorf, Jürgen Thomale, and Hermann Lage

PHOTOBIOLOGY

177 **Ultraviolet-B-Induced Oxidative DNA Base Damage in Primary Normal Human Epidermal Keratinocytes and Inhibition by a Hydroxyl Radical Scavenger**
Edward Pelle, Xi Huang, Thomas Mammone, Kenneth Marenus, Daniel Maes, and Krystyna Frenkel

184 **Prevention of Immunosuppression by Sunscreens in Humans Is Unrelated to Protection from Erythema and Dependent on Protection from Ultraviolet A in the Face of Constant Ultraviolet B Protection**
Terence S. C. Poon, Ross StC. Barnetson, and Gary M. Halliday

TUMOR BIOLOGY

191 **Ultraviolet B Irradiation Induces Expansion of Intraepithelial Tumor Cells in a Tissue Model of Early Cancer Progression**
Adarsh V. Mudgil, Nadav Segal, Frank Andriani, Youai Wang, Norbert E. Fusenig, and Jonathan A. Garlick

198 **cTAGE: A Cutaneous T Cell Lymphoma Associated Antigen Family with Tumor-Specific Splicing**
Dirk Usener, Dirk Schadendorf, Joachim Koch, Stefan Dübel, and Stefan Eichmüller

WOUND HEALING

1 **Review: Electrical Stimulation of Wound Healing**
Joseph C. Ojingwa and R. Rivkah Isseroff

MUTATION REPORT

207 **Phenotypic Expression of Melanocortin-1 Receptor Mutations in Black Jamaicans**
Colin A. McKenzie, Rosalind M. Harding, Jennifer Brown Tomlinson, Amanda J. Ray, Kazumasa Wakamatsu, and Jonathan L. Rees

LETTERS TO THE EDITOR

208 **Confocal Microscopy of the Skin in the Diagnosis of X-Linked Alport Syndrome**
Andrea Onetti Muda, Laura Massella, Konstantinos Giannakakis, Alessandra Renieri, Gianfranco Rizzoni, and Tullio Faraggiana

211 **High Seroprevalence of Anti-Mycoplasma Fermentans Antibodies in Patients with Malignant Aphthosis**
Christos C. Zouboulis, Julia R. Turnbull, and Peter F. Mühlradt

212 **Lack of Evidence for the Presence of Simian Virus 40 DNA in Cutaneous Lymphomas**
Amir S. Yazdi, Ursula Puchta, Michael J. Flaig, and Christian A. Sander

214 **Computerized Digital Dermoscopy: Sensitivity And Specificity Aren't Enough**
Seaver L. Soon, Calvin O. McCall, and Suephy C. Chen

215 **Active Human Herpesvirus 6 Infection in a Patient with Drug Rash with Eosinophilia and Systemic Symptoms**
Vincent Descamps, Sophie Collot, Emmanuel Mahé, Nadhira Houhou, Béatrice Crickx, and Sylvie Ranger-Rogez

217 **Expression of Functional Toll-Like Receptors on Cultured Human Epidermal Keratinocytes**
Kazuhiro Kawai

RESPONSE

217 **Human Normal Keratinocytes Express Biologically Functional CD14 and Toll-Like Receptors**
Peter I. Song, Cheryl A. Armstrong, and John C. Ansel

SID Abstracts

AUGUST 2003 VOLUME 121 NUMBER 2

EDITORIAL

iv **Clinical Snippets**

v **BJD Research Snippets**

vi **In This Issue**
James T. Elder

viii **Eat Plenty of Green Leafy Vegetables for Photoprotection: Emerging Evidence**
Hasan Mukhtar

ix **Treating Severe Psoriasis: How to Navigate Safely Between Scylla and Charybdis?**
Carle F. Paul

xi **Dropping Lipids for Epidermal Defense**
Matthias Schmuth

REVIEW ARTICLES

219 **Wound Epithelialization: Accelerating the Pace of Discovery**
Pierre A. Coulombe

231 **Barrier Function of the Skin: "La Raison d'tre" of the Epidermis**
Kathi C. Madison

ORIGINAL ARTICLES

CELL BIOLOGY

242 **Keratinocyte Adherens Junctions Initiate Nuclear Signaling by Translocation of Plakoglobin from the Membrane to the Nucleus**
Peiqi Hu, Paula Berkowitz, Edward J. O'Keefe, and David S. Rubenstein

CLINICAL RESEARCH

252 **The Increased Risk of Skin Cancer Is Persistent After Discontinuation of Psoralen + Ultraviolet A: A Cohort Study**
Tamar E. C. Nijsten, and Robert S. Stern

259 **Demarcation of Nonmelanoma Skin Cancer Margins in Thick Excisions Using Multispectral Polarized Light Imaging**
Anna N. Yaroslavsky, Victor Neel, and R. Rox Anderson

CONNECTIVE TISSUE

267 **Increased Skin Collagen Extractability and Proportions of Collagen Type III Are Not Normalized After 6 Months Healing of Human Excisional Wounds**
Simon P. Robins, George Milne, Alexander Duncan, Claire Davies, Richard Butt, Doris Greiling, and Ian T. James

GENETICS

273 **Skin Expression of Metalloproteinases and Tissue Inhibitor of Metalloproteinases in Sibling Patients with Recessive Dystrophic Epidermolysis and Intrafamilial Phenotypic Variation**
Christine Bodemer, Sylvie Igondjo Tchen, Sabah Ghomrasseni, Sylvie Séguier, Frédérick Gaultier, Sylvie Fraitag, Yves de Prost, and Gaston Godeau

IMMUNOLOGY/INFECTION

280 **Interleukin-3Rα^+ Myeloid Dendritic Cells and Mast Cells Develop Simultaneously from Different Bone Marrow Precursors in Cultures with Interleukin-3**
Thomas Baumeister, Susanne Rößner, Gabi Pech, Marella F. T. R. de Bruijn, Pieter J. M. Leenen, Gerold Schuler, and Manfred B. Lutz

289 Mite Allergen Induces Allergic Dermatitis with Concomitant Neurogenic Inflammation in Mouse
Chiung Hui Huang, I Chun Kuo, Hui Xu, Yoke Sun Lee, and Kaw Yan Chua

294 Inflammatogenic Properties of Bacterial DNA Following Cutaneous Exposure
Lena Mölne, L. Vincent Collins, and Andrej Tarkowski

300 Adenosine Slows Migration of Dendritic Cells but Does Not Affect Other Aspects of Dendritic Cell Maturation
Susanne Hofer, Lennart Ivarsson, Patrizia Stoitzner, Margit Auffinger, Christian Rainer, Nikolaus Romani, and Christine Heufler

308 Molecular and Functional Bases of Self-Antigen Recognition in Long-Term Persistent Melanocyte-Specific $CD8^+$ T Cells in One Vitiligo Patient
Stefania Mantovani, Silvia Garbelli, Belinda Palermo, Rita Campanelli, Valeria Brazzelli, Giovanni Borroni, Myriam Martinetti, Federica Benvenuto, Giampaolo Merlini, Gioacchino Robustelli della Cuna, Licia Rivoltini, and Claudia Giachino

KERATINOCYTES/EPIDERMIS

315 Expression of Purinergic Receptors in Non-Melanoma Skin Cancers and Their Functional Roles in A431 Cells
Aina V. H. Greig, Claire Linge, Vourneen Healy, Philip Lim, Elizabeth Clayton, Malcolm H. A. Rustin, D Angus McGrouther, and Geoffrey Burnstock

328 Involvement of Oxidative Stress in Apoptosis Induced by a Mixture of Isothiazolinones in Normal Human Keratinocytes
Anna Ettorre, Marco Andreassi, Cecilia Anselmi, Paolo Neri, Lucio Andreassi, and Anna Di Stefano

337 Induction of Adipose Differentiation Related Protein and Neutral Lipid Droplet Accumulation in Keratinocytes by Skin Irritants
Emmanuela Corsini, Barbara Viviani, Omar Zancanella, Laura Lucchi, Francesco Visioli, Ginette Serrero, Stefano Bartesaghi, Corrado L. Galli, and Marina Marinovich

345 pH Directly Regulates Epidermal Permeability Barrier Homeostasis, and Stratum Corneum Integrity/Cohesion
Jean-Pierre Hachem, Debra Crumrine, Joachim Fluhr, Barbara E. Brown, Kenneth R. Feingold, and Peter M. Elias

354 Role of Taurine Accumulation in Keratinocyte Hydration
Guido Janeke, Wilfried Siefken, Stefanie Carstensen, Gunja Springmann, Oliver Bleck, Hans Steinhart, Peter Höger, Klaus-Peter Wittern, Horst Wenck, Franz Stäb, Gerhard Sauermann, Volker Schreiner, and Thomas Doering

362 Influx of Calcium and Chloride Ions into Epidermal Keratinocytes Regulates Exocytosis of Epidermal Lamellar Bodies and Skin Permeability Barrier Homeostasis
Mitsuhiro Denda, Shigeyoshi Fuziwara, and Kaori Inoue

368 Gene Expression Profile of Tissue Engineered Skin Subjected to Acute Barrier Disruption
Piyush Koria, Daniel Brazeau, Keith Kirkwood, Patrick Hayden, Mitchell Klausner, and Stelios T. Andreadis

383 Calcium-Dependent Conformation of Desmoglein 1 Is Required for its Cleavage by Exfoliative Toxin
Yasushi Hanakawa, Trevor Selwood, Denise Woo, Chenyan Lin, Norman M. Schechter, and John R. Stanley

PHOTOBIOLOGY

390 Quantitative Real-Time Reverse Transcription–Polymerase Chain Reaction Analysis of Drug Metabolizing and Cytoprotective Genes in Psoriasis and Regulation by Ultraviolet Radiation
Gillian Smith, Robert S. Dawe, Colin Clark, Alan T. Evans, Muriel M. Comrie, C Roland Wolf, James Ferguson, and Sally H. Ibbotson

399 Dietary Lutein/Zeaxanthin Decreases Ultraviolet B-Induced Epidermal Hyperproliferation and Acute Inflammation in Hairless Mice
Salvador González, Susi Astner, Wu An, David Goukassian, and Madhu A. Pathak

406 Protective Effect of α-Tocopherol-6-*O*-Phosphate Against Ultraviolet B-Induced Damage in Cultured Mouse Skin
Satomi Nakayama, Eiko M. Katoh, Toshi Tsuzuki, and Shizuko Kobayashi

412 Importance of Tissue Transglutaminase in Repair of Extracellular Matrices and Cell Death of Dermal Fibroblasts After Exposure to a Solarium Ultraviolet A Source
Stephane R. Gross, Zita Balklava, and Martin Griffin

LETTERS TO THE EDITOR

424 Potential Fraud in Fig 2: JID 103:92–96, 1994
Jean Krutmann, Markus Grewe, and Anne Budnik

424 **Potential Fraud in Fig 2: JID 103:92–96, 1994**
Friedhelm Herrmann

425 **A Novel Ferrochelatase Gene Mutation (IVS1−2 A→C) in Erythropoietic Protoporphyria**
Wook Lew

428 **Mammaglobin in Normal Human Sweat Glands and Human Sweat Gland Tumors**
Anna Sjödin, Dongsheng Guo, Per-Åke Hofer, Roger Henriksson, and Håkan Hedman

430 **Compound Heterozygous Mutations in the Hairless Gene in Atrichia with Papular Lesions**
Amy S. Paller, George Varigos, Arye Metzker, Robert C. Bauer, Jacinta Opie, Amalia Martinez-Mir, Angela M. Christiano, and Abraham Zlotogorski,

433 **Mal de Meleda**
Stella Fatovic-Ferencic

434 **Errata**

SEPTEMBER 2003 VOLUME 121 NUMBER 3

IN MEMORIAM

iv **Peter M. Steinert, 1945–2003**
John J. DiGiovanna

EDITORIALS

v **Clinical Snippets**
Lowell A. Goldsmith

vi **In This Issue**
Andrew Blauvelt

COMMENTARIES

vii **Migrating Skin Lesions: A Genetic Clue**
Lowell A. Goldsmith

ix **The Current State and Future of Clonality Studies in Mycosis Fungoides**
Dan Jones and Madeleine Duvic

xi **Reversing the Angiogenic Switch with Photodynamic Therapy**
Jack L Arbiser

xiii **Further Light Is Shed on Topical Therapy**
Braham Shroot

REVIEW

435 **DNA Mismatch Repair Proteins: Potential Guardians Against Genomic Instability and Tumorigenesis Induced by Ultraviolet Photoproducts**
Leah C. Young, John B. Hays, Victor A. Tron, and Susan E. Andrew

ORIGINAL ARTICLES

APPENDAGES

441 **Expression of Peroxisome Proliferator-Activated Receptor and CCAAT/Enhancer Binding Protein Transcription Factors in Cultured Human Sebocytes**
WenChieh Chen, Chao-Chun Yang, Hamm-Ming Sheu, Holger Seltmann, and Christos C. Zouboulis

448 **Phosphatidic Acid Has a Potential to Promote Hair Growth *In Vitro* and *In Vivo*, and Activates Mitogen-Activated Protein Kinase/Extracellular Signal-Regulated Kinase Kinase in Hair Epithelial Cells**
Tomoya Takahashi, Ayako Kamimura, Takako Hamazono-Matsuoka, and Shinkichi Honda

EPIDERMIS

457 **A Novel Approach for the Detection of Proteolytically Activated Transglutaminase 1 in Epidermis Using Cleavage Site-Directed Antibodies**
Ryoko Iizuka, Katsuyoshi Chiba, and Shinobu Imajoh-Ohmi

465 **Adenosine Triphosphate Binding Cassette (ABC) Transporters Are Expressed and Regulated During Terminal Keratinocyte Differentiation: A Potential Role for ABCA7 in Epidermal Lipid Reorganization**
Danuta Kielar, Wolfgang E. Kaminski, Gerhard Liebisch, Armin Piehler, Jürgen J. Wenzel, Christoph Möhle, Susanne Heimerl, Thomas Langmann, Sven O. Friedrich, Alfred Böttcher, Stefan Barlage, Wolfgang Drobnik, and Gerd Schmitz

GENETICS

475 **Letter to the Editor: Mutations in ATP2A2 in Patients with Darier's Disease**
Shigaku Ikeda, Nobuyasu Mayuzumi, Takako Shigihara, Ervin H. Epstein Jr, Lowell A. Goldsmith, and Hideoki Ogawa

478 **Spectrum of PTCH1 Mutations in French Patients with Gorlin Syndrome**
Nathalie Boutet, Yves-Jean Bignon, Valérie Drouin-Garraud, Pierre Sarda, Michel Longy, Didier Lacombe, and Philippe Gorry

482 **A Usual Frameshift and Delayed Termination Codon Mutation in Keratin 5 Causes a Novel Type of Epidermolysis Bullosa Simplex with Migratory Circinate Erythema**
Li-Hong Gu, Soo-Chan Kim, Yoshiro Ichiki, Junsu Park, Miki Nagai, and Yasuo Kitajima

486 **Mutations in the Sarcoplasmic/Endoplasmic Reticulum Ca^{2+} ATPase Isoform Cause Darier's Disease**
Jittima Dhitavat, Leonard Dode, Natalie Leslie, Anavaj Sakuntabhai, Gérard Lorette, and Alain Hovnanian

IMMUNOLOGY/INFECTION

490 **Terfenadine Antagonism Against Interleukin-4-Modulated Gene Expression of T Cell Cytokines**
Akira Maeda, Kiyomi Matsushita, Fumie Yamazaki, Akira Kawada, Tadashi Tezuka, and Yoshinori Aragane

496 **T Cell Receptor Transfection Shows Non-HLA-Restricted Recognition of Nickel by $CD8^+$ Human T Cells to be Mediated by $\alpha\beta$ T Cell Receptors**
Corinne Moulon, Yoanna Choleva, Hermann-Josef Thierse, Doris Wild, and Hans Ulrich Weltzien

502 **Exacerbated and Prolonged Allergic and Non-Allergic Inflammatory Cutaneous Reaction in Mice with Targeted Interleukin-18 Expression in the Skin**
Yusuke Kawase, Tomoaki Hoshino, Koichi Yokota, Akemi Kuzuhara, Yasuyuki Kirii, Eiji Nishiwaki, Yu Maeda, Junji Takeda, Masaki Okamoto, Seiya Kato, Toshihiro Imaizumi, Hisamichi Aizawa, and Kohichiro Yoshino

510 **Role of Monocyte Chemoattractant Protein-1 and its Receptor, CCR-2, in the Pathogenesis of Bleomycin-Induced Scleroderma**
Toshiyuki Yamamoto and Kiyoshi Nishioka

517 **Epidermal Langerhans Cells Efficiently Mediate CD1a-Dependent Presentation of Microbial Lipid Antigens to T Cells**
Victor Peña-Cruz, Susumu Ito, Christopher C. Dascher, Michael B. Brenner, and Masahiko Sugita

KERATINOCYTES/EPIDERMIS

522 **Flotillas of Lipid Rafts in Transit Amplifying Cell-Like Keratinocytes**
Robert Gniadecki and Bo Bang

529 **The Proteinase-Activated Receptor-2 Mediates Phagocytosis in a Rho-Dependent Manner in Human Keratinocytes**
Glynis Scott, Sonya Leopardi, Lorelle Parker, Laura Babiarz, Miri Seiberg, and Rujiing Han

542 **Expression and Localization of Tissue Kallikrein mRNAs in Human Epidermis and Appendages**
Nahoko Komatsu, Minoru Takata, Norio Otsuki, Tadashi Toyama, Rie Ohka, Kazuhiko Takehara, and Kiyofumi Saijoh

MELANOCYTES/MELANOMA

550 **Cytotoxic T Lymphocyte Reactivity to gp100, MelanA/MART-1, and Tyrosinase, in HLA-A2-Positive Vitiligo Patients**
Rochelle L. Mandelcorn-Monson, Neil H. Shear, Eddy Yau, Suryaprakash Sambhara, Brian H. Barber, David Spaner, and Mark A. DeBenedette

557 **Tumor Necrosis Factor α Increases and α-Melanocyte-Stimulating Hormone Reduces Uveal Melanoma Invasion Through Fibronectin**
Irene Cantón, Paula C. Eves, Marika Szabo, Fernando Vidal-Vanaclocha, Karen Sisley, Ian G. Rennie, John W. Haycock, and Sheila MacNeil

564 **Pigmented Melanocytes Are Protected Against Ultraviolet-A-Induced Membrane Damage**
Egil Kvam and Jostein Dahle

NEUROBIOLOGY

570 **Histamine Enhances the Production of Nerve Growth Factor in Human Keratinocytes**
Naoko Kanda and Shinichi Watanabe

PHOTOBIOLOGY

578 **Proteins of the Extracellular Matrix Are Sensitizers of Photo-Oxidative Stress in Human Skin Cells**
Georg T. Wondrak, Michael J. Roberts, Daniel Cervantes-Laurean, Myron K. Jacobson, and Elaine L. Jacobson

587 **Nitric Oxide Appears to Be a Mediator of Solar-Simulated Ultraviolet Radiation-Induced Immunosuppression in Humans**
Johanna M. Kuchel, Ross St. C. Barnetson, and Gary M. Halliday

594 **Topical Calcitriol is Degraded by Ultraviolet Light**
Mark Lebwohl, John Quijije, Jean Gilliard, Thierry Rollin, and Oliver Watts

596 **Molecular Responses to Photogenotoxic Stress Induced by the Antibiotic Lomefloxacin in Human Skin Cells: From DNA Damage to Apoptosis**
Laurent Marrot, Jean Phillipe Beladi, Christophe Jones, Phillipe Perez, Lydia Riou, Alain Sarasin, and Jean Roch Meunier

607 **Ginsenoside F1 Protects Human HaCaT Keratinocytes from Ultraviolet-B-Induced Apoptosis by Maintaining Constant Levels of Bcl-2**
Enn Hee Lee, Si Young Cho, Su Jong Kim, Eui Seok Shin, Hui Kyoung Chang, Duck Hee Kim, Myeong Hoon Yeom, Kwang Sik Woe, Jinseon Lee, Young Chul Sim, and Tae Ryong Lee

TUMOR BIOLOGY

614 **Correlations Between Clinical, Histologic, Blood, and Skin Polymerase Chain Reaction Outcome in Patients Treated for Mycosis Fungoides**
Olivier Dereure, Muriel Balavoine, Marie-Thérèse Salles, Sophie Candon-Kerlau, Jacques Clot, Jean-Jacques Guilhou, and Jean-François Eliaou

618 **Genomic Alterations in Blastic Natural Killer/Extranodal Natural Killer-Like T Cell Lymphoma with Cutaneous Involvement**
Xin Mao, Zerrin Onadim, Elizabeth A. Price, Fiona Child, Debra M. Lillington, Robin Russell-Jones, Bryan D. Young, and Sean Whittaker

628 **Differential Modulation of Ku70/80 DNA-Binding Activity in a Patient with Multiple Basal Cell Carcinomas**
Paola Mazzarelli, Carla Rabitti, Paola Parrella, Davide Seripa, Paolo Persichetti, Giovanni Francesco Marangi, Giuseppe Perrone, Maria Luana Poeta, Mario Delfino, and Vito Michele Fazio

VASCULAR BIOLOGY

634 **Photodynamic Therapy for Cutaneous Proliferative Vascular Tumors in a Mouse Model**
Maritza A. Middelkamp-Hup, Ignacio Sánchez-Carpintero, Sylvie Kossodo, Peter Waterman, Salvador González, Martin C. Mihm Jr, and R. Rox Anderson

WOUND HEALING

640 **Heme-Scavenging Role of α_1-Microglobulin in Chronic Ulcers**
Maria Allhorn, Katarina Lundqvist, Artur Schmidtchen, and Bo Åkerström

LETTER TO THE EDITOR

647 **Is Varicella-Zoster Virus Involved in the Etiopathogeny of Pityriasis Lichenoides?**
Franck Boralevi, Emmanuelle Cotto, Laurence Baysse, Anne-Christine Jouvencel, Christine Léauté-Labrèze, and Alain Taïeb

OCTOBER 2003 VOLUME 121 NUMBER 4

EDITORIALS

iv **Clinical Snippets**
Lowell A. Goldsmith

v **In This Issue**
Jouni Uitto and Gabriele Richard

COMMENTARIES

vii **Biologic Lessons from Mutations in the Kreb's Cycle Enzyme, Fumarate Hydratase**
John A. McGrath

viii **Photo Protection Begins at the Cellular Level: Microparasols on the Job**
Glynis Scott

ix **Are Broad-Spectrum Sunscreens Necessary for Immunoprotection?**
Antony R. Young

xi **The Great Escape: Another Way for Melanoma to Leave Physiological Control?**
Keiran S. M. Smalley and Meenhard Herlyn

xiii **Serendipity: A Quarter of a Millennium Anniversary**
Stella Fatović-Ferenčić and Karl Holubar

REVIEW

650 **The Melanosome: Dark Pigment Granule Shines Bright Light on Vesicle Biogenesis and More**
Vijayasaradhi Setaluri

ORIGINAL ARTICLES

APPENDAGES

661 **Expression of Cyclooxygenase Isozymes During Morphogenesis and Cycling of Pelage Hair Follicles in Mouse Skin: Precocious Onset of the First Catagen Phase and Alopecia upon Cyclooxygenase-2 Overexpression**
Karin Müller-Decker, Christoph Leder, Melanie Neumann, Gitta Neufang, Christiane Bayerl, Jürgen Schweizer, Friedrich Marks, and Gerhard Fürstenberger

669 **Protease-Activated Receptor-1 (Thrombin Receptor) Is Expressed in Mesenchymal Portions of Human Hair Follicle**
T. Anan, T. Sonoda, Y. Asada, S. Kurata, and S. Takayasu

674 **Alopecia in a Novel Mouse Model RCO3 Is Caused by mK6irs1 Deficiency**
T. Peters, R. Sedlmeier, H. Büssow, F. Runkel, G. H. Lüers, D. Korthaus, H. Fuchs, M. Hrabé de Angelis, G. Stumm, A. P. Russ, R. M. Porter, M. Augustin, and T. Franz

CELL BIOLOGY

681 **Actin Reorganization Is Abnormal and Cellular ATP Is Decreased in Hailey-Hailey Keratinocytes**
Ida Aronchik, Martin J. Behne, Laura Leypoldt, Debbie Crumrine, Ervin Epstein, Shigaku Ikeda, Masayuki Mizoguchi, Graham Bench, Tullio Pozzan, and Theodora Mauro

688 **Human Keratinocyte ATP2C1 Localizes to the Golgi and Controls Golgi Ca^{2+} Stores**
Martin J. Behne, Chia-Ling Tu, Ida Aronchik, Ervin Epstein, Graham Bench, Daniel D. Bikle, Tullio Pozzan, and Theodora M. Mauro

695 **Fibroblast Migration on Fibronectin Requires Three Distinct Functional Domains**
Richard A. F. Clark, Jian-Qiang An, Doris Greiling, Azim Khan, and Jean E. Schwarzbauer

CLINICAL RESEARCH

706 **View of Normal Human Skin *In Vivo* as Observed Using Fluorescent Fiber-Optic Confocal Microscopic Imaging**
Lucinda D. Swindle, Steven G. Thomas, Michael Freeman, and Peter M. Delaney

CONNECTIVE TISSUE

713 **Latency-Associated Peptide Prevents Skin Fibrosis in Murine Sclerodermatous Graft-Versus-Host Disease, a Model for Human Scleroderma**
Yan Zhang, Laura L. McCormick, and Anita C. Gilliam

GENETICS

720 **Targeted Inactivation of Murine Laminin γ2-Chain Gene Recapitulates Human Junctional Epidermolysis Bullosa**
Xianmin Meng, John F. Klement, Dominic A. Leperi, David E. Birk, Takako Sasaki, Rupert Timpl, Jouni Uitto, and Leena Pulkkinen

732 **A Novel Missense Mutation in CYLD in a Family with Brooke–Spiegler Syndrome**
Guofang Hu, Meltem Önder, Melissa Gill, Burhan Aksakal, Murat Öztas, M. Ali Gürer, and Jülide Tok Çelebi

735 **Psoriasis Susceptibility Locus on 18p Revealed by Genome Scan in Finnish Families Not Associated with PSORS1**
Kati Asumalahti, Tarja Laitinen, Päivi Lahermo, Sari Suomela, Raija Itkonen-Vatjus, Christer Jansen, Jaakko Karvonen, Seija-Liisa Karvonen, Timo Reunala, Erna Snellman, Tutta Uurasmaa, Ulpu Saarialho-Kere, and Juha Kere

741 **Germline Fumarate Hydratase Mutations in Families with Multiple Cutaneous and Uterine Leiomyomata**
Amalia Martinez-Mir, Benjamin Glaser, Gary S. Chuang, Liran Horev, Arie Waldman, Danielle E. Engler, Derek Gordon, Lynda J. Spelman, Ioannis Hatzibougias, Jack Green, Angela M. Christiano, and Abraham Zlotogorski

IMMUNOLOGY/INFECTION

745 **Efficient Induction of CD8 T-Associated Immune Protection by Vaccination with mRNA Transfected Dendritic Cells**
Shohreh Zarei, Jean-François Arrighi, Gioele Ongaro, Thomas Calzascia, Olivier Haller, Christophe Frossard, Vincent Piguet, Paul R. Walker, and Conrad Hauser

751 **Association of Transcription-Coupled Repair but Not Global Genome Repair with Ultraviolet-B-Induced Langerhans Cell Depletion and Local Immunosuppression**
Wendy Kölgen, Harry van Steeg, Gijsbertus T. J. van der Horst, Jan H. J. Hoeijmakers, Willem A. van Vloten, Frank R. de Gruijl, and Johan Garssen

757 **Inhibition of IgE-Production by Peroxisome Proliferator-Activated Receptor Ligands**
Ralph Rühl, Anja Dahten, Florian J. Schweigert, Udo Herz, and Margitta Worm

765 **Autoantibodies in Vitiligo Patients Recognize Multiple Domains of the Melanin-Concentrating Hormone Receptor**
Raju V. S. R. K. Gottumukkala, Elizabeth A. Waterman, Laura M. Herd, David J. Gawkrodger, Philip F. Watson, Anthony P. Weetman, and E. Helen Kemp

771 **17β-Estradiol Enhances the Production of Nerve Growth Factor in THP-1-Derived Macrophages or Peripheral Blood Monocyte-Derived Macrophages**
Naoko Kanda and Shinichi Watanabe

KERATINOCYTES/EPIDERMIS

781 **The Expression of Vitamin D-Upregulated Protein 1 in Skin and its Interaction with Sciellin in Cultured Keratinocytes**
Marie-France Champliaud, Alain Viel, and Howard P. Baden

786 **Vitamin C Recycling Is Enhanced in the Adaptive Response to Leptin-Induced Oxidative Stress in Keratinocytes**
Isabella Savini, Maria Valeria Catani, Antonello Rossi, Guglielmo Duranti, Marco Ranalli, Gerry Melino, Stefania Sabatini, and Luciana Avigliano

794 **The Characterization of Molecular Organization of Multilamellar Emulsions Containing Pseudoceramide and Type III Synthetic Ceramide**
B. D. Park, J. K. Youm, S. K. Jeong, E. H. Choi, S. K. Ahn, and S. H. Lee

MELANOCYTES/MELANOMA

802 **The Heregulin/Human Epidermal Growth Factor Receptor as a New Growth Factor System in Melanoma with Multiple Ways of Deregulation**
Christophe Stove, Veronique Stove, Lara Derycke, Veerle Van Marck, Marc Mareel, and Marc Bracke

813 **Role of Cytoplasmic Dynein in Perinuclear Aggregation of Phagocytosed Melanosomes and Supranuclear Melanin Cap Formation in Human Keratinocytes**
H. Randolph Byers, Soniya Maheshwary, Dana M. Amodeo, and Sarah G. Dykstra

821 **A Novel Splice Variant of Pmel17 Expressed by Human Melanocytes and Melanoma Cells Lacking Some of the Internal Repeats**
Sarah E. Nichols, Dawn C. Harper, Joanne F. Berson, and Michael S. Marks

831 **Microphthalmia Associated Transcription Factor Is a Target of the Phosphatidylinositol-3-Kinase Pathway**
Mehdi Khaled, Lionel Larribere, Karine Bille, Jean-Paul Ortonne, Robert Ballotti, and Corine Bertolotto

PHOTOBIOLOGY

837 **Ultraviolet Irradiation Induces Apoptosis in Human Immature, But Not in Skin Mast Cells**
Sven Guhl, Karin Hartmann, Silke Tapkenhinrichs, Alina Smorodchenko, Andreas Grützkau, Beate M. Henz, and Torsten Zuberbier

845 **Ultraviolet B Radiation-Mediated Inhibition of Interferon-γ-Induced Keratinocyte Activation Is Independent of Interleukin-10 and Other Soluble Mediators but Associated with Enhanced Intracellular Suppressors of Cytokine-Signaling Expression**
Markus Friedrich, Ruth Holzmann, Wolfram Sterry, Kerstin Wolk, Andreas Truppel, Helmut Piazena, Christiane Schonbein, Robert Sabat, and Khusru Asadullah

853 **Epidermal COX-2 Induction Following Ultraviolet Irradiation: Suggested Mechanism for the Role of COX-2 Inhibition in Photoprotection**
Catherine S. Tripp, Eric A. G. Blomme, Kevin S. Chinn, Medora M. Hardy, Peter LaCelle, and Alice P. Pentland

862 **Sunscreens Inadequately Protect Against Ultraviolet-A-Induced Free Radicals in Skin: Implications for Skin Aging and Melanoma?**
Rachel Haywood, Peter Wardman, Roy Sanders, and Claire Linge

869 **High Ultraviolet A Protection Affords Greater Immune Protection Confirming that Ultraviolet A Contributes to Photoimmunosuppression in Humans**
Elma D. Baron, Anny Fourtanier, Delphine Compan, Chantal Medaisko, Kevin D. Cooper, and Seth R. Stevens

876 **DNA Mismatch Repair Protein Msh6 Is Required for Optimal Levels of Ultraviolet-B-Induced Apoptosis in Primary Mouse Fibroblasts**
Leah C. Young, Anthea C. Peters, Tomoko Maeda, Winfried Edelmann, Raju Kucherlapati, Susan E. Andrew, and Victor A. Tron

TUMOR BIOLOGY

881 **Arsenic Trioxide Induces Apoptosis of Cutaneous T Cell Lymphoma Cells: Evidence for a Partially Caspase-Independent Pathway and Potentiation by Ascorbic Acid (Vitamin C)**
Laurence Michel, Alain Dupuy, Francette Jean-Louis, Aurore Sors, Jol Poupon, Manuelle Viguier, Philippe Musette, Louis Dubertret, Laurent Degos, Hervé Dombret, and Hervé Bachelez

894 **Microsatellite Instability Is Associated with Hypermethylation of the hMLH1 Gene and Reduced Gene Expression in Mycosis Fungoides**
Julia J. Scarisbrick, Tracey J. Mitchell, Eduardo Calonje, Guy Orchard, Robin Russell-Jones, and Sean J. Whittaker

902 **Tazarotene-Induced Gene 3 Is Suppressed in Basal Cell Carcinomas and Reversed *In Vivo* by Tazarotene Application**
Madeleine Duvic, Xiao Ni, Rakhashandra Talpur, Kelly Herne, Claudia Schulz, Dawen Sui, Staci Ward, Aaron Joseph, and Parul Hazarika

VASCULAR BIOLOGY

910 **Release of Vascular Endothelial Growth Factor from a Human Melanoma Cell Line, WM35, Is Induced by Hypoxia but Not Ultraviolet Radiation and Is Potentiated by Activated Ras Mutation**
Yiqun G. Shellman, Young-Lip Park, David G. Marr, Katie Casper, Yisheng Xu, Mayumi Fujita, Robert Swerlick, and David A. Norris

WOUND HEALING

918 **Iron and 8-Isoprostane Levels in Acute and Chronic Wounds**
Sim Yeoh-Ellerton and Michael C. Stacey

926 **Comparison of Mouse Matrix Metalloproteinase 13 Expression in Free-Electron Laser and Scalpel Incisions During Wound Healing**
Nanjun Wu, E. Duco Jansen, and Jeffrey M. Davidson

LETTERS TO THE EDITOR

933 **Selective Expression of Chemokine Monokine Induced by Interferon-γ in Alopecia Areata**
Sandrine Benoit, Atiye Toksoy, Matthias Goebeler, and Reinhard Gillitzer

936 **Activated Neutrophils Exert Antitumor Activity Against Human Melanoma Cells: Reactive Oxygen Species-Induced Mechanisms and Their Modulation by Granulocyte-Macrophage–Colony-Stimulating Factor**
Joachim Dissemond, Tatjana K. Weimann, Lars A. Schneider, Achim Schneeberger, Karin Scharffetter-Kochanek, Manfred Goos, and Stephan N. Wagne

939 **Novel Mutations in X-Linked Dominant Chondrodysplasia Punctata (CDPX2)**
Neil V. Whittock, Louise Izatt, Anuska Mann, Tessa Homfray, Christopher Bennett, Sahar Mansour Jane Hurst, Alan Fryer, Anand K. Saggar, Julian G. Barwell, Sian Ellard, and Peter T. Clayton

943 **SCUR Abstracts**

NOVEMBER 2003 VOLUME 121 NUMBER 5

iv **Marion B. Sulzberger, M.D. 1895–1983; A Twenty Year Retrospective**
Lowell A. Goldsmith
Karl Holubar
Irwin M. Freedberg
Victor H. Witten

EDITORIAL

xiii **Clinical Snippets**
Lowell A. Goldsmith

COMMENTARIES

xiv **Activation of B-raf in Non-Malignant Nevi Predicts a Novel Tumor Suppressor Gene in Melanoma (MAP Kinase Phosphatase)**
Jack L. Arbiser

xv **The Continuing Saga of Epidermal Stem Cells**
Jackie R. Bickenbach

xvii **Decreased Serum Ferritin and Alopecia in Women**
D. Hugh Rushton

xix **Matrix Metalloproteinase-19: What Role Does this Enzyme Play in Wound Healing?**
Cornelia Mauch

xxi **Fibrin Is a Many Splendored Thing**
Richard A.F. Clark

xxiii **Talk to the Hand 'Cause the Nucleus Ain't Listening: Ad-hesion, Communication, and Tumor Cell Invasion in the Skin**
David S. Rubenstein

REVIEW ARTICLE

951 **The Molecular Basis of Lymphocyte Recruitment to the Skin: Clues for Pathogenesis and Selective Therapies of Inflammatory Disorders**
Michael P. Schön, Thomas M. Zollner, and W.-Henning Boehncke

ORIGINAL ARTICLES

APPENDAGES

963 **Keratin 15 Promoter Targets Putative Epithelial Stem Cells in the Hair Follicle Bulge**
Yaping Liu, Stephen Lyle, Zaixin Yang, and George Cotsarelis

969 **Profile of Transforming Growth Factor-β Responses During the Murine Hair Cycle**
Tsutomu Soma, Cord E. Dohrmann, Toshihiko Hibino, and Laurel A. Raftery

976 **Kit Is Expressed by Epithelial Cells *In Vivo***
Eva M. J. Peters, Marcus Maurer, Vladimir A. Botchkarev, Karin deMasey Jensen, Pia Welker, Glynis A. Scott, and Ralf Paus

CLINICAL RESEARCH

985 **Decreased Serum Ferritin is Associated With Alopecia in Women**
Jonathan Kantor, Lisa Jay Kessler, David G. Brooks, and George Cotsarelis

CONNECTIVE TISSUE

989 **Matrix Metalloproteinase-19 Expression in Normal and Diseased Skin: Dysregulation by Epidermal Proliferation**
Thorsten Sadowski, Sebastian Dietrich, Matthias Müller, Blanka Havlickova, Michael Schunck, Ehrhardt Proksch, Markus Stefan Müller, and Radislav Sedlacek

997 **Matrix Metalloproteinase-19 Expression in Dermal Wounds and by Fibroblasts in Culture**
Niina Hieta, Ulla Impola, Carlos López-Otín, Ulpu Saarialho-Kere, and Veli-Matti Kähäri

1005 **Mechanisms of Hypoxic Regulation of Plasminogen Activator Inhibitor-1 Gene Expression in Keloid Fibroblasts**
Qunzhou Zhang, Yidi Wu, David K. Ann, Diana V. Messadi, Tai-Lan Tuan, A. Paul Kelly, Charles N. Bertolami, and Anh D. Le

GENETICS

1013 **Splice Site and Deletion Mutations in Keratin (*KRT1* and *KRT10*) Genes: Unusual Phenotypic Alterations in Scandinavian Patients with Epidermolytic Hyperkeratosis**
Marie Virtanen, S. Kaye Smith, Tobias Gedde-Dahl Jr, Anders Vahlquist, and Paul E. Bowden

1021 **Normal and Gene-Corrected Dystrophic Epidermolysis Bullosa Fibroblasts Alone Can Produce Type VII Collagen at the Basement Membrane Zone**
David T. Woodley, Gerald G. Krueger, Cynthia M. Jorgensen, Janet A. Fairley, Tom Atha, Yi Huang, Lawrence Chan, Douglas R. Keene, and Mei Chen

1029 **Truncation of CGI-58 Protein Causes Malformation of Lamellar Granules Resulting in Ichthyosis in Dorfman-Chanarin Syndrome**
Masashi Akiyama, Daisuke Sawamura, Yuko Nomura, Makoto Sugawara, and Hiroshi Shimizu

1035 **Clouston Syndrome Can Mimic Pachyonychia Congenita**
Maurice A.M. van Steensel, Marcel F. Jonkman, Michel van Geel, Peter M. Steijlen, W.H. Irwin McLean, and Frances J.D. Smith

IMMUNOLOGY/INFECTION

1039 **Thiol Antioxidants Block the Activation of Antigen-Presenting Cells by Contact Sensitizers**
Stefanie Bruchhausen, Sabine Zahn, Elke Valk, Jürgen Knop, and Detlef Becker

1045 **Chemokine Receptor Expression on Neoplastic and Reactive T Cells in the Skin at Different Stages of Mycosis Fungoides**
Tilmann Kallinich, J. Marcus Muche, Shixin Qin, Wolfram Sterry, Heike Audring, and Richard A. Kroczek

1053 **Sex Differences in Opioid-Induced Enhancement of Contact Hypersensitivity**
Jay C. Elliott, Mitchell J. Picker, Christina J. Nelson, Kelly A. Carrigan, and Donald T. Lysle

1060 **Thalidomide Inhibits Tumor Necrosis Factor-α Production and Antigen Presentation by Langerhans Cells**
Liang Deng, Wanhong Ding, and Richard D. Granstein

1066 **Keratinocyte ATP Release Assay for Testing Skin-Irritating Potentials of Structurally Diverse Chemicals**
Norikatsu Mizumoto, Mark E. Mummert, David Shalhevet, and Akira Takashima

1073 **H1 and H2 Histamine Receptors Are Absent on Langerhans Cells and Present on Dermal Dendritic Cells**
Tomoyuki Ohtani, Setsuya Aiba, Masato Mizuashi, Zia UA Mollah, Satoshi Nakagawa, and Hachiro Tagami

1080 **Immune Protection Factors of Chemical Sunscreens Measured in the Local Contact Hypersensitivity Model in Humans**
Peter Wolf, Christine Hoffmann, Franz Quehenberger, Stephan Grinschgl, and Helmut Kerl

KERATINOCYTES/EPIDERMIS

1088 **Inhibition of the Epidermal Growth Factor Receptor Suppresses Telomerase Activity in HSC-1 Human Cutaneous Squamous Cell Carcinoma Cells**
Arief Budiyanto, Toshinori Bito, Makoto Kunisada, Masashi Ashida, Masamitsu Ichihashi, and Masato Ueda

1095 **Side Population Keratinocytes Resembling Bone Marrow Side Population Stem Cells Are Distinct From Label-Retaining Keratinocyte Stem Cells**
Atsushi Terunuma, Kimberly L. Jackson, Veena Kapoor, William G. Telford, and Jonathan C. Vogel

1104 **Expression and Localization of Peroxisome Proliferator-Activated Receptors and Nuclear Factor κB in Normal and Lesional Psoriatic Skin**
Majken Westergaard, Jeanette Henningsen, Claus Johansen, Sofie Rasmussen, Morten Lyhne Svendsen, Uffe Birk Jensen, Henrik Daa Schrøder, Bart Staels, Lars Iversen, Lars Bolund, Knud Kragballe, and Karsten Kristiansen

1118 **Lasers and Microdermabrasion Enhance and Control Topical Delivery of Vitamin C**
Woan-Ruoh Lee, Shing-Chuan Shen, Kuo-Hsien Wang, Chung-Hong Hu, and Jia-You Fang

1126 **Differential Regulation of Cyclooxygenase-2 Expression by Phytosphingosine Derivatives, NAPS and TAPS, and its Role in the NAPS or TAPS-Mediated Apoptosis**
Hye Jung Kim, Weonhye Shin, Chang Seo Park, Hyung-Ok Kim, and Tae-Yoon Kim

1135 *Letter to the Editor:* **Tetraacetyl Phytosphingosine-Induced Caspase Activation and Apoptosis Occur Through G_2 Arrest in Human Keratinocyte HaCaT Cells**
Ho Jin Kim, Hye Jung Kim, Sang Hoon Kim, and Tae-Yoon Kim

1138 **Iontophoresis and Sonophoresis Stimulate Epidermal Cytokine Expression at Energies That Do Not Provoke a Barrier Abnormality: Lamellar Body Secretion and Cytokine Expression Are Linked to Altered Epidermal Calcium Levels**
Eung Ho Choi, Min Jung Kim, Byung-Il Yeh, Sung Ku Ahn, and Seung Hun Lee

1145 **Purinergic Receptors Are Part of a Signaling System for Keratinocyte Proliferation, Differentiation, and Apoptosis in Human Fetal Epidermis**
Aina V. H. Greig, Claire Linge, Alison Cambrey, and Geoffrey Burnstock

MELANOCYTES/MELANOMA

1150 **Human Melanoblasts in Culture: Expression of BRN2 and Synergistic Regulation by Fibroblast Growth Factor-2, Stem Cell Factor, and Endothelin-3**
Anthony L. Cook, Philippe D. Donatien, Aaron G. Smith, Mark Murphy, Malcolm K. Jones, Meenhard Herlyn, Dorothy C. Bennett, J. Helen Leonard, and Richard A. Sturm

1160 **Mutations of the BRAF Gene in Benign and Malignant Melanocytic Lesions**
Amir S. Yazdi, Gabriele Palmedo, Michael J. Flaig, Ursula Puchta, Andrea Reckwerth, Arno Rütten, Thomas Mentzel, Heino Hügel, Markus Hantschke, Monika-Hildegard Schmid-Wendtner, Heinz Kutzner, and Christian A. Sander

PHOTOBIOLOGY

1163 **Vitamin A Exerts a Photoprotective Action in Skin by Absorbing Ultraviolet B Radiation**
Christophe Antille, Christian Tran, Olivier Sorg, Pierre Carraux, Liliane Didierjean, and Jean-Hilaire Saurat

1168 **S100A8 Induction in Keratinocytes by Ultraviolet A Irradiation Is Dependent on Reactive Oxygen Intermediates**
Michele A. Grimbaldeston, Carolyn L. Geczy, Nicodemus Tedla, John J. Finlay-Jones, and Prue H. Hart

1175 **Mice With Genetically Determined High Susceptibility to Ultraviolet (UV)-Induced Immunosuppression Show Enhanced UV Carcinogenesis**
Frances P. Noonan, H. Konrad Muller, Thomas R. Fears, Donna F. Kusewitt, Tracy M. Johnson, and Edward C. De Fabo

TUMOR BIOLOGY

1182 **Abrogation of E-Cadherin-Mediated Adhesion Induces Tumor Cell Invasion in Human Skin-Like Organotypic Culture**
Alexander Margulis, Frank Andriani, Norbert Fusenig, Koji Hashimoto, Yasushi Hanakawa, and Jonathan A. Garlick

VASCULAR BIOLOGY

1191 **Induction of Interferon Regulatory Factor 1 Expression in Human Dermal Endothelial Cells by Interferon-γ and Tumor Necrosis Factor-α Is Transcriptionally Regulated and Requires Iron**
Amy K. Gira, Katherine A. Casper, Kristen B. Otto, Shubhada M. Naik, S. Wright Caughman, and Robert A. Swerlick

1197 **Endurance Training Enhances Vasodilation Induced by Nitric Oxide in Human Skin**
Yann Boegli, Gerald Gremion, Sandrine Golay, Sandrine Kubli, Lucas Liaudet, Pierre-François Leyvraz, Bernard Waeber, and François Feihl

1205 **Topically Applied Imiquimod Inhibits Vascular Tumor Growth *In Vivo***
Robert Sidbury, Nicole Neuschler, Erin Neuschler, Ping Sun, Xiao-qi Wang, Richard Miller, Mark Tomai, Elena Puscasiu, Sajiv Gugneja, and Amy S. Paller

WOUND HEALING

1210 **A Novel Role of Fibrin in Epidermal Healing: Plasminogen-Mediated Migration and Selective Detachment of Differentiated Keratinocytes**
David J. Geer and Stelios T. Andreadis

LETTERS TO THE EDITOR

1217 ***Mutation Report:* Phenotypic Diversity and Mutation Spectrum in Hypotrichosis with Juvenile Macular Dystrophy**
Margarita Indelman, Christian P. Hamel, Reuven Bergman, Ken K. Nischal, Dorothy Thompson, Marie-Odile Surget, Michal Ramon, Hatam Ganthos, Benjamin Miller, Gabriele Richard, Raziel Lurie, Rina Leibu, Isabelle Russell-Eggitt, and Eli Sprecher

1220 **CD34 in Human Hair Follicle**
Enrique Poblet and Francisco Jiménez

1220 **Response**
Carol S. Trempus, Rebecca J. Morris, George Cotsarelis, and Raymond W. Tennant

1221 **A Novel *GJB2* (Connexin 26) Mutation, F142L, in a Patient with Unusual Mucocutaneous Findings and Deafness**
Chester W. Brown, Moise L. Levy, Catherine M. Flaitz, Barbara S. Reid, Spiros Manolidis, Adelaide A. Hebert, Matthew M. Bender, Heidi A. Heilstedt, Katie S. Plunkett, Ping Fang, Benjamin B. Roa, Pil Chung, Hsiao-Yuan Tang, Gabriele Richard, and Raye L. Alford

1224 **Structure and Heterogeneity of the Human Gene for Epiplakin (EPPK1)**
Naoko Takeo, Wenqing Wang, Noritaka Matsuo, Hideaki Sumiyoshi, Hidekatsu Yoshioka, and Sakuhei Fujiwara

1226 ***Propionibacterium acnes*-Reactive T Helper-1 Cells in the Skin of Patients with Acne Vulgaris**
Paul E. Mouser, Barbara S. Baker, Edward D. Seaton and Anthony C. Chu

1228 **Tightening Tight Junctions with Compression Therapy**
Birgit Kahle, Marco Idzko, Johannes Norgauer, Eberhard Rabe and Yared Herouy

1229 **Inhibition of Vascular Cell Adhesion Molecule-1 Expression in Human Dermal Microvascular Endothelial Cells by Iron Chelators**
Thierry Simonart

1231 **Errata**

1232 **8th International Workshop on Langehans Cells**

1253 **International Symposium on Atopic Dermatitis**

DECEMBER 2003 VOLUME 121 NUMBER 6

EDITORIAL

v **Clinical Snippets**
Lowell A. Goldsmith

vi **In This Issue**
Jonathan Rees

vii **A Mouthful of Epithelial–Mesenchymal Interactions**
Michael W. Hughes and Cheng-Ming Chuong

ix **Cell Movement in the Hair Follicle Dermis – More Than a Two-Way Street?**
Colin A.B. Jahoda

xii **P for Probability and p for p53**
Jonathan Rees

xiv **Assessment of Itch: More to be Learned and Improvements to be Made**
Gil Yosipovitch

ORIGINAL ARTICLES

APPENDAGES

1267 **Cultured Peribulbar Dermal Sheath Cells Can Induce Hair Follicle Development and Contribute to the Dermal Sheath and Dermal Papilla**
Kevin J. McElwee, Sabine Kissling, Elke Wenzel, Andrea Huth, and Rolf Hoffmann

1276 **Type II Epithelial Keratin 6hf (K6hf) Is Expressed in the Companion Layer, Matrix, and Medulla in Anagen-Stage Hair Follicles**
Zhiling Wang, Pauline Wong, Lutz Langbein, Jürgen Schweizer, and Pierre A. Coulombe

CELL BIOLOGY

1283 **Inhibition of the Transforming Growth Factor-β/Smad Signaling Pathway in the Epithelium of Oral Lichen**
Andreas Karatsaidis, Olav Schreurs, Tony Axéll, Kristen Helgeland, and Karl Schenck

1291 **Cross-Talk Between RhoGTPases and Stress Activated Kinases for Matrix Metalloproteinase-9 Induction in Response to Keratinocytes Injury**
Laurent Turchi, Anne-Amandine Chassot, Isabelle Bourget, Christine Baldescchi, Jean Paul Ortonne, Guerrino Meneguzzi, Emmanuel Lemichez, and Gilles Ponzio

CLINICAL RESEARCH

1301 **Perceptual Matching for Assessment of Itch; Reliability and Responsiveness Analyzed by a Rank-Invariant Statistical Method**
Elisabet Stener-Victorin, Thomas Lundeberg, Jan Kowalski, Lars Opdal, Johan Sjöström, and Lena Lundeberg

1306 **Epidermal Overexpression of Interleukin-19 and -20 mRNA in Psoriatic Skin Disappears After Short-Term Treatment with Cyclosporine A or Calcipotriol**
John Rømer, Erik Hasselager, Peder Lisby Nørby, Torben Steiniche, Jes Thorn Clausen, and Knud Kragballe

1312 **Botulinum Toxin Type B Blocks Sudomotor Function Effectively: A 6 Month Follow Up**
Frank Birklein, Gabi Eisenbarth, Frank Erbguth, and Martin Winterholler

CONNECTIVE TISSUE

1317 **Collagen of Chronically Inflamed Skin Is Over-Modified and Upregulates Secretion of Matrix Metalloproteinase 2 and Matrix-Degrading Enzymes by Endothelial Cells and Fibroblasts**
Arisa Hirota, Tetsuya Ebihara, Masashi Kusubata, Miya Kobayashi, Kunihiko Kobayashi, Kumiko Kuwaba, Keisuke Tanaka, Tomomi Kiriyama, Shinkichi Irie, and Yoh-ichi Koyama

1326 **Keratinocytes Promote Proliferation and Inhibit Apoptosis of the Underlying Fibroblasts: An Important Role in the Pathogenesis of Keloid**
Emi Funayama, Thinle Chodon, Akihiko Oyama, and Tsuneki Sugihara

1332 **Reversible Dissociation of Collagen in Tissues**
Alvin T. Yeh, Bernard Choi, J. Stuart Nelson, and Bruce J. Tromberg

GENETICS

1336 **Rapid Decay of α6 Integrin Caused by a Mis-Sense Mutation in the Propeller Domain Results in Severe Junctional Epidermolysis Bullosa with Pyloric Atresia**
Maryline Allegra, Laurent Gagnoux-Palacios, Yannick Gache, Stéphanie Roques, Gilles Lestringant, Jean-Paul Ortonne, and Guerrino Meneguzzi

1344 **Identification of a Lethal Form of Epidermolysis Bullosa Simplex Associated with a Homozygous Genetic Mutation in Plectin**
Alexandra Charlesworth, Laurent Gagnoux-Palacios, Maryse Bonduelle, Jean-Paul Ortonne, Linda De Raeve, and Guerrino Meneguzzi

1349 **Impaired Trafficking of the Desmoplakins in Cultured Darier's Disease Keratinocytes**
Jittima Dhitavat, Christian Cobbold, Natalie Leslie, Susan Burge, and Alain Hovnanian

1356 **A Novel Loss-of-Function Mutation (N48K) in the PTEN Gene in a Spanish Patient with Cowden Disease**
Ana Vega, Josema Torres, María Torres, José Cameselle-Teijeiro, Manuel Macia, ngel Carracedo, and Rafael Pulido

1360 **HCR, a Candidate Gene for Psoriasis, Is Expressed Differently in Psoriasis and Other Hyperproliferative Skin Disorders and Is Downregulated by Interferon-γ in Keratinocytes**
Sari Suomela, Outi Elomaa, Kati Asumalahti, Arja Leena Kariniemi, Seija Liisa Karvonen, Juha Peltonen, Juha Kere, and Ulpu Saarialho-Kere

IMMUNOLOGY/INFECTION

1365 **T Cell Receptor Gene Usage in Desmoglein-3-Specific T Lymphocytes from Patients with Pemphigus Vulgaris**
Mary K. Hacker-Foegen, Janet A. Fairley, and Mong-Shang Lin

1373 **Pathogenicity and Epitope Characteristics of Anti-Desmoglein-1 from Pemphigus Foliaceus Patients Expressing Only IgG1 Autoantibodies**
Mary K. Hacker-Foegen, Marleen Janson, Masayuki Amagai, Janet A. Fairley, and Mong-Shang Lin

1379 **Interleukin-21 Inhibits Dendritic Cell-Mediated T Cell Activation and Induction of Contact Hypersensitivity *In Vivo***
Katja Brandt, Silvia Bulfone-Paus, André Jenckel, Donald C. Foster, Ralf Paus, and René Rückert

1383 **Dimethylfumarate Is a Potent Inducer of Apoptosis in Human T Cells**
Felix Treumer, Kejian Zhu, Regine Gläser, and Ulrich Mrowietz

1389 **Toll-Like Receptor Expression in Human Keratinocytes: Nuclear Factor κB Controlled Gene Activation by *Staphylococcus aureus* Is Toll-Like Receptor 2 but Not Toll-Like Receptor 4 or Platelet Activating Factor Receptor Dependent**
Martin Mempel, Verena Voelcker, Gabriele Köllisch, Christian Plank, Roland Rad, Markus Gerhard, Christina Schnopp, Peter Fraunberger, Autar K. Walli, Johannes Ring, Dietrich Abeck, and Markus Ollert

1397 **Interleukin-3 in Cooperation with Transforming Growth Factor β Induces Granulocyte Macrophage Colony Stimulating Factor Independent Differentiation of Human CD34+ Hematopoietic Progenitor Cells into Dendritic Cells with Features of Langerhans Cells**
Zia U. A. Mollah, Setsuya Aiba, Satoshi Nakagawa, Masato Mizuashi, Tomoyuki Ohtani, Yumiko Yoshino, and Hachiro Tagami

1402 **The Autoantigen of Anti-p200 Pemphigoid Is an Acidic Noncollagenous N-Linked Glycoprotein of the Cutaneous Basement Membrane**
Iakov Shimanovich, Yoshiaki Hirako, Cassian Sitaru, Takashi Hashimoto, Eva-B. Bröcker, Elke Butt, Detlef Zillikens

1409 **Immunopathologic Features of Allergic Contact Dermatitis in Humans: Participation of Plasmacytoid Dendritic Cells in the Pathogenesis of the Disease?**
Christine Bangert, Josef Friedl, Georg Stary, Georg Stingl, and Tamara Kopp

1419 **Mechanisms for a Novel Immune Evasion Strategy in the Scabies Mite *Sarcoptes Scabiei*: A Multigene Family of Inactivated Serine Proteases**
Deborah C. Holt, Katja Fischer, George E. Allen, Danny Wilson, Peter Wilson, Robert Slade, Bart J. Currie, Shelley F. Walton, and David J. Kemp

1425 **Generation of a Large Number of Connective Tissue Type Mast Cells by Culture of Murine Fetal Skin Cells**
Nobuo Yamada, Hironori Matsushima, Yutaka Tagaya, Shinji Shimada, and Stephen I. Katz

KERATINOCYTES/EPIDERMIS

1433 **Tumor Necrosis Factor Related Apoptosis Inducing Ligand Triggers Apoptosis in Dividing but Not in Differentiating Human Epidermal Keratinocytes**
Bastiaan J. H. Jansen, Fred van Ruissen, Stefanie Cerneus, Wendy Cloin, Mieke Bergers, Piet E. J. van Erp, and Joost Schalkwijk

1440 **The Organization of Human Epidermis: Functional Epidermal Units and Phi Proportionality**
Steven B. Hoath and D.G. Leahy

1447 **Modulation of Gene Expression Induced in Human Epidermis by Environmental Stress *In Vivo***
Claire Marionnet, Françoise Bernerd, Arnaud Dumas, Franck Verrecchia, Karine Mollier, Delphine Compan, Bruno Bernard, Morad Lahfa, Jacques Leclaire, Chantal Medaisko, Bruno Mehul, Sophie Seité, Alain Mauviel, and Louis Dubertret

1459 **Transcriptional Profiling of Epidermal Keratinocytes: Comparison of Genes Expressed in Skin, Cultured Keratinocytes, and Reconstituted Epidermis, Using Large DNA Microarrays**
Alix Gazel, Patricia Ramphal, Martin Rosdy, Bart De Wever, Carine Tornier, Nadia Hosein, Brian Lee, Marjana Tomic-Canic, and Miroslav Blumenberg

1469 **Transcriptional Control of the Mouse *Col7a1* Gene in Keratinocytes: Basal and Transforming Growth Factor-β Regulated Expression**
Michael Naso, Jouni Uitto, and John F. Klement

1479 **Crucial Effects of Fibroblasts and Keratinocyte Growth Factor on Morphogenesis of Reconstituted Human Oral Epithelium**
Daniela Elena Costea, Lado Lako Loro, Elisabeth Anne Okumo Dimba, Olav Karsten Vintermyr, and Anne Christine Johannessen

1487 **Aquaporin 3 Colocates with Phospholipase D_2 in Caveolin-Rich Membrane Microdomains and Is Downregulated Upon Keratinocyte Differentiation**
Xiangjian Zheng and Wendy Bollinger Bollag

1496 **Corticotropin-Releasing Hormone Inhibits Nuclear Factor-κB Pathway in Human HaCaT Keratinocytes**
Blazej Zbytek, Lawrence M. Pfeffer, and Andrzej T. Slominski

1500 **17β-Estradiol Inhibits Oxidative Stress-Induced Apoptosis in Keratinocytes by Promoting Bcl-2 Expression**
Naoko Kanda and Shinichi Watanabe

MELANOCYTES/MELANOMA

1510 **p53 Codon 72 Arg Homozygotes Are Associated with an Increased Risk of Cutaneous Melanoma**
Hongbing Shen, Zhensheng Liu, Sara S. Strom, Margaret R. Spitz, Jeffrey E. Lee, Jeffrey E. Gershenwald, Merrick I. Ross, Paul F. Mansfield, Madeleine Duvic, Honnavara N. Ananthaswamy, and Qingyi Wei

NEUROBIOLOGY

1515 **Expression and Function of Neurotrophins and Their Receptors in Cultured Human Keratinocytes**
A. Marconi, M. Terracina, C. Fila, J. Franchi, F. Bonté, G. Romagnoli, R. Maurelli, C. M. Failla, M. Dumas, and C. Pincelli

TUMOR BIOLOGY

1522 **Contribution of Flow Cytometry in the Diagnosis of Cutaneous Lymphoid Lesions**
Hong Wu, Mitchell Smith, Michael M. Millenson, Nicos Nicolaou, Vivianna M. Van Deerlin, Kathkali Addya, Stuart Lessin, and Tahseen Al-Saleem

1531 **Presence of Human Papillomavirus DNA in Plucked Eyebrow Hairs Is Associated with a History of Cutaneous Squamous Cell Carcinoma**
Linda Struijk, Jan Nico Bouwes Bavinck, Patrick Wanningen, Els van der Meijden, Rudi G.J. Westendorp, Jan Ter Schegget, and Mariet C.W. Feltkamp

VASCULAR BIOLOGY

1536 **An N-Terminal 80 kDa Recombinant Fragment of Human Thrombospondin-2 Inhibits Vascular Endothelial Growth Factor Induced Endothelial Cell Migration *In Vitro* and Tumor Growth and Angiogenesis *In Vivo***
Yun-Hee Noh, Kant Matsuda, Young-Kwon Hong, Rainer Kunstfeld, Lucia Riccardi, Manuel Koch, Hajimu Oura, Soheil S. Dadras, Michael Streit, and Michael Detmar

WOUND HEALING

1544 **Expression and Activity of Arginase Isoenzymes During Normal and Diabetes-Impaired Skin Repair**
Heiko Kämpfer, Josef Pfeilschifter, and Stefan Frank

LETTERS TO THE EDITOR

1552 **The Importance of Cationic Amino Acid Transporter Expression in Human Skin**
Kristin Recker, Thomas Klapperstück, Astrid Kehlen, and Johannes Wohlrab

1554 **The 97-kDa (LABD97) and 120-kDa (LAD-1) Fragments of Bullous Pemphigoid Antigen 180/Type XVII Collagen Have Different N-Termini**
Yoshiaki Hirako, Yuji Nishizawa, Cassian Sitaru, Annika Opitz, Katrin Marcus, Helmut E. Meyer, Elke Butt, Katsushi Owaribe, and Detlef Zillikens

1557 **Altered Distribution of Calcium in Facial Epidermis of Aged Adults**
Mitsuhiro Denda, Akiko Tomitaka, Hirohiko Akamatsu, and Kayoko Matsunaga

1559 **Detection and Mutation Screening of *malassezia sympodialis* Sequences Coding for the Mal s 1 Allergen Implicated in Atopic Dermatitis**
George Gaitanis, Panayiotis Menounos, Andreas Katsambas, Aristea Velegraki

1561 **Genetic Basis of Male Pattern Baldness**
Dale R. Nyholt, Nathan A. Gillespie, Andrew C. Heath, and Nicholas G. Martin

1565 **Erratum**

1566 **Abstracts of the Congrès Annuel de la Recherche Dermatologique (CARD) 12–13 June 2003, Rouen France**

1579 **SID Acknowledgements 2002**

1581 **SID Minutes 2002**

1585 **2002 Journal Report**

Volume Contents 121

Indexes